This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently amended): An isolated heterodimeric receptor, ~~which~~ wherein said receptor comprises ~~an~~ first opioid receptor subunit and a second G-protein coupled receptor (GPCR) subunit, and wherein both receptor subunits are expressed ~~endogenously~~ in the same ~~type of~~ cell.

Claim 2 (Currently amended): The heterodimeric receptor of claim 1, wherein the second receptor subunit is an opioid receptor protein that is distinct from the first opioid receptor subunit protein.

Claim 3 (Currently amended): The heterodimeric receptor of claim 1, wherein the second receptor subunit is a dopamine receptor protein.

Claim 4 (Currently amended): The heterodimeric receptor of claim 1, wherein the second receptor subunit is an adrenergic receptor protein.

Claim 5 (Currently amended): The heterodimeric receptor of claim 1, wherein the second receptor subunit is a chemokine receptor protein.

Claim 6 (Currently amended): The heterodimeric receptor of claim 1, wherein the opioid receptor subunit is a delta opioid receptor protein and the second receptor subunit is

selected from the group consisting of kappa opioid receptor protein, mu opioid receptor protein, D2 dopamine receptor protein, and β2-adrenergic receptor protein.

Claim 7 (Currently amended): The heterodimeric receptor of claim 1, wherein the opioid receptor subunit is a kappa opioid receptor protein and the second receptor subunit is selected from the group consisting of delta opioid receptor protein, D2 dopamine receptor protein, α2-adrenergic receptor protein, β2-adrenergic receptor protein, CCR5 protein, and CXCR4 protein.

Claim 8 (Currently amended): The heterodimeric receptor of claim 1, wherein the opioid receptor subunit is a mu opioid receptor protein and the second receptor subunit is selected from the group consisting of delta opioid receptor protein and α2-adrenergic receptor protein.

Claim 9 (Currently amended): The heterodimeric receptor of claim 1, wherein the opioid receptor subunit is a fusion protein comprising a sequence of a functional opioid receptor protein and a tag sequence.

Claim 10 (Currently amended): The heterodimeric receptor of claim 1, wherein the second receptor subunit is a fusion protein comprising a sequence of a functional second receptor protein and a tag sequence.

Claim 11 (Currently amended): A recombinant host cell that expresses a functional heterodimeric receptor, ~~which~~ wherein said receptor comprises an opioid receptor subunit expressed from an expression vector introduced into the host cell, and a second G-protein coupled receptor (GPCR) subunit expressed from an expression vector introduced into the same

host cell, wherein the host cell does not endogenously express the ~~both~~ receptor subunits ~~are expressed endogenously in the same type of cell~~.

Claim 12 (Currently amended): The host cell of claim 11, wherein the second receptor subunit is a different opioid receptor protein or a covalently associated opioid receptor protein.

Claim 13 (Currently amended): The host cell of claim 11, wherein the second receptor subunit is a dopamine receptor protein.

Claim 14 (Currently amended): The host cell of claim 11, wherein the second receptor subunit is an adrenergic receptor protein.

Claim 15 (Currently amended): The host cell of claim 11, wherein the second receptor subunit is a chemokine receptor protein.

Claim 16 (Currently amended): The host cell of claim 11, wherein the opioid receptor subunit is a delta opioid receptor protein and the second receptor subunit is selected from the group consisting of kappa opioid receptor protein, mu opioid receptor protein, D2 dopamine receptor protein, and β2-adrenergic receptor protein.

Claim 17 (Currently amended): The host cell of claim 11, wherein the opioid receptor subunit is a kappa opioid receptor protein and the second receptor subunit is selected from the group consisting of delta opioid receptor protein, D2 dopamine receptor protein, α2-adrenergic receptor protein, β2-adrenergic receptor protein, CCR5 protein, and CXCR4 protein.

Claim 18 (Currently amended): The host cell of claim 11, wherein the opioid receptor subunit is a mu opioid receptor protein and the second receptor subunit is selected from the group consisting of delta opioid receptor protein and α2-adrenergic receptor protein.

Claim 19 (Currently amended): A method of screening for a compound that modulates a property of a heterodimeric receptor, ~~which~~ wherein said receptor comprises an opioid receptor subunit and a second G-protein coupled receptor (GPCR) subunit, wherein both receptor subunits are heterologously expressed ~~endogenously~~ in a host ~~the same type of~~ cell, which method comprises observing a change in a property of the heterodimeric receptor contacted with a candidate compound.

Claim 20 (Original): The method according to claim 19, wherein the heterodimeric receptor property is trafficking of the heterodimeric receptor.

Claim 21 (Original): The method according to claim 19, wherein the heterodimeric receptor property is binding affinity for a ligand.

Claim 22 (Original): The method according to claim 19, wherein the heterodimeric receptor property is activation of a signal transduction pathway.

Claim 23 (Original): The method according to claim 22, wherein the signal transduction pathway is selected from the group consisting of cAMP production and MAPK phosphorylation.

Claim 24 (Withdrawn): A bispecific, bivalent compound comprising an opioid receptor ligand bound to a second G-protein coupled receptor ligand, wherein the second receptor is expressed endogenously in a type of cell that endogenously expresses the opioid receptor.

Claim 25 (Withdrawn): The compound of claim 24, wherein both ligands are agonists.

Claim 26 (Withdrawn): The compound of claim 24, wherein both ligands are antagonists.

Claim 27 (Withdrawn): The compound of claim 24, wherein both ligands are kappa receptor ligands.

Claim 28 (Withdrawn): The compound of claim 24, wherein the opioid receptor ligand is a kappa receptor agonist and the second receptor ligand is a delta receptor agonist.

Claim 29 (Withdrawn): A pharmaceutical composition comprising synergistically effective amounts of a ligand of a delta opioid receptor and a ligand of a second receptor selected from the group consisting of kappa opioid receptor, mu opioid receptor, D2 dopamine receptor, and β2-adrenergic receptor.

Claim 30 (Withdrawn): A pharmaceutical composition comprising synergistically effective amounts of a ligand of a kappa opioid receptor and a ligand of a second receptor selected from the group consisting of delta opioid receptor, D2 dopamine receptor, α2-adrenergic receptor, β2-adrenergic receptor, CCR5, and CXCR4.

Claim 31 (Withdrawn): A pharmaceutical composition comprising synergistically effective amounts of a ligand of a mu opioid receptor and a ligand of a second receptor selected from the group consisting of delta opioid receptor and α2-adrenergic receptor.

Claim 32 (Withdrawn): A method of treating a disease or disorder selected from the group consisting of chronic pain, drug abuse, schizophrenia, depression, central reward pathway, HIV infection, cardiovascular disease, and hypertension, which method comprises administering a therapeutically effective dose of a compound of claim 24.

Claim 33 (Withdrawn): A method of treating a disease or disorder selected from the group consisting of chronic pain, drug abuse, schizophrenia, depression, central reward pathway, HIV infection, cardiovascular disease, and hypertension, which method comprises administering a therapeutically effective dose of a pharmaceutical composition of claim 29.

Claim 34 (Withdrawn): A method of treating a disease or disorder selected from the group consisting of chronic pain, drug abuse, schizophrenia, depression, central reward pathway, HIV infection, cardiovascular disease, and hypertension, which method comprises administering a therapeutically effective dose of a pharmaceutical composition of claim 30.

Claim 35 (Withdrawn): A method of treating a disease or disorder selected from the group consisting of chronic pain, drug abuse, schizophrenia, depression, central reward pathway, HIV infection, cardiovascular disease, and hypertension, which method comprises administering a therapeutically effective dose of a pharmaceutical composition of claim 31.